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would, as apparent changes have more or less constantly been taking place.

The question asked in No. 7—"The drawing (Lieut. Herschel's) had undoubtedly reached Australia, has Mr. Abbott copied it?"—I answer, No!—The whole of my drawings were made previous to, and independent of, any others.

In making comparison, it would be desirable to refer to the original drawings, as in the lithographs, which are on a reduced scale, some trifling inaccuracies occur.

Private Observatory, Hobart Town,
5th October, 1871.

I have forwarded by the same mail lithographic copies of the drawings, made by order of the Government, and published in the *Proceedings of the Royal Society of Tasmania.*

Note on Mr. Abbott's imagined Discovery of great Changes in the Argo Nebula. By R. A. Proctor, B.A.

I have received a letter and several papers from Mr. Abbott on the subject of the Nebula in *Argo;* and he appears to desire that I should express an opinion as to the reality of the supposed changes in the Nebula. I have, therefore, re-examined his papers and pictures, to which I had given a careful scrutiny two or three years ago. I had then been quite perplexed by the arrangement of the stars as compared with the Cape Monograph. But now, after reading Capt. Herschel's Note on the subject in the last Supplementary Number of the *Monthly Notices,* I find not the least difficulty in interpreting Mr. Abbott's pictures. Unquestionably Capt. Herschel is right. Mr. Abbott has supposed the dark spaces (shown in Sir J. Herschel's Monograph) to correspond to the lemniscate, which would unquestionably imply a complete change in the whole aspect of the Nebula. On the scale of Mr. Abbott's drawings the lemniscate would be about 2-5ths of an inch long; it would, in fact, be a minute and scarcely discernible feature. Mr. Abbott's field of view has a diameter exceeding the length of the rectangular space included in Sir J. Herschel's Monograph. The case is precisely as though an observer with a small telescope, using a power so low as to give a field 1° 8′ in diameter, were to regard the appearance of the Nebula so seen as a view of the region immediately surrounding the trapezium. It is most unfortunate that by this mistake Mr. Abbott has caused so much valuable time to be wasted by Sir J. Herschel, the Astronomer Royal, Mr. Lassell, and others.

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On the Spectrum of Hydrogen at Low Pressure.

By G. M. Seabroke, Esq.

During the late summer months I have been comparing the lines given by hydrogen in the spectroscope with the lines of the solar spectrum, for the purpose of ascertaining whether any lines in the Sun's chromosphere were due to hydrogen, besides those usually supposed to be due to this element. The observations are as yet incomplete; but as it will be some months before I can again proceed, I therefore produce the results obtained up to the present time. The experiments have been conducted in a room adjoining the Temple Observatory lately erected at Rugby. My mode of proceeding has been briefly as follows:—I use a vacuum tube containing hydrogen, and connected with a Sprengel's air-pump. The tube is of the ordinary form, having the part between the bulbs, into which the platinum wires pass, about $\frac{1}{40}$-inch internal diameter. The pressure in the tube varied from 3 to 4 mm of mercury. Preliminary experiments showed that at this pressure the lines appeared most distinct; but a slight change of pressure near 4 mm made little alteration in the lines. There is a battery of 12 Smees to work the coil for passing the spark in the vacuum tube. The light from the hydrogen tube passed through a lens which concentrates it on the slit of the spectroscope. A dispersive power of 4 prisms of 60° was used, the arrangement of the instrument being such that the ray of light traverses each prism twice. The room is kept perfectly dark, and sunlight is reflected down from the roof by means of a heliostat. At first I tried the usual mode of comparing spectra, viz. by having the hydrogen and solar spectra side by side. I found this answer very well for the bright lines, but the faint ones could not be distinguished by the side of the bright solar spectrum. I therefore placed a very fine platinum wire in the eyepiece of the spectroscope, and brought the lines under examination into coincidence with the wire, and then passed the sunlight in, and found which black line coincided with the wire, or, where there was no coincidence, the position of the wire with respect to the black lines. I have made from 10 to 20 observations on each line that I have at present examined. I have every reason to believe that the limit of error is within two divisions of Fraunhofer's scale either way. The table below gives the positions of the lines I have already compared. These I hope to examine again next year, and also to finish the remainder.

Reference No.	Position on Kirchhoff's Scale.	Relative Brightness. 10=brightest.	Remarks.
1	694	10	C.
2	881	..	Limit of a number of close lines towards C.
3	930	5	Brightest red line, except C.
4	1014	5	Suspiciously near the chromosphere line near D.

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Reference No.	Position on Kirchhoff's Scale.	Relative Brightness. 10=brightest.	Remarks.
5	1049	3	The positions of these were taken by reference to the mercury lines, and are therefore not so reliable as the others.
6	1061	4	
7	1119	3	
8	1533	4	
9	1621	4	
10	1876	4	
11	1943	3	
12	1991	6	
13	2065	3	
14	2080	10	F.
15	2235	4	Near here, exact place uncertain.
16	2361	6	
17	2428·5	..	Limit of a band towards F.
18	2540	2	
19	2605	3	
20	2670	3	
21	2767	..	Faint band.

On comparing the above table with the catalogue of chromospheric lines by Professor Young, published in the *Philosophical Magazine* of November, 1871, I see no sufficient signs of coincidence to lead me to believe that any of the chromospheric lines in his list are due to hydrogen, except the C and F, already well known to be so due. Since I have not yet examined lines further than 2767, the "near G" (2796) and *h* lines, also known to be due to hydrogen, are not mentioned in the above list. In these experiments a spectroscope with a large dispersive and magnifying power was found to be required in order to identify the lines in the solar spectrum, so that the hydrogen spectrum became so reduced in brightness that, in order to see the fainter lines, the eye required to be kept for some minutes in the dark room, although with a spectroscope of low power the spectrum appeared very bright and full of lines.

Occultation of ε Capricorni by the Moon, Nov. 18th, 1871, observed at Forest Lodge, Maresfield. By Capt. William Noble.

The star disappeared instantaneously at the

Moon's dark limb at $22^{\mathrm{h}}\ 52^{\mathrm{m}}\ 31^{\mathrm{s}}{\cdot}3$ L.S.T. = $7^{\mathrm{h}}\ 3^{\mathrm{m}}\ 0^{\mathrm{s}}{\cdot}7$ L.M.T.

and reappeared, pretty sharply, at the

Bright limb about $23^{\mathrm{h}}\ 39^{\mathrm{m}}\ 8^{\mathrm{s}}{\cdot}0$ L.S.T. = $7^{\mathrm{h}}\ 49^{\mathrm{m}}\ 58^{\mathrm{s}}{\cdot}9$ L.M.T.

The Moon was low, and there was a good deal of undulation. Power 255, adjusted on the star.